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2 Guidelines for Hospital Privileges in Vascular Surgery and Endovascular Interventions:
3 Recommendations of the Society for Vascular Surgery
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5 By Keith D. Calligaro, MD, Kwame S. Amankwah, MD, Marcus D’Ayala, MD,
6 O. William Brown, MD, Paul Steven Collins, MD, Mohammad H. Eslami, MD, MPH,
7 Krishna Jain, MD, Daniel Kassavin, MD, Brandon Propper, MD,
8 Timur Sarac, MD, William Shutze, MD, and Thomas H. Webb, MD
9

10 **Abstract**

11 The Hospital Privileges Practice Guideline Writing Group of the Society for Vascular
12 Surgery (SVS) is making the following five recommendations concerning guidelines for hospital
13 privileges for vascular surgery and endovascular therapy. Advanced endovascular procedures are
14 currently entrenched in the everyday practice of specialized vascular interventionalists, including
15 vascular surgeons, but open vascular surgery remains uniquely essential to the specialty. First,
16 we endorse the Residency Review Committee for Surgery recommendations regarding open and
17 endovascular cases during vascular residency and fellowship training. Second, applicants for
18 new hospital privileges wishing to perform vascular surgery should have completed an
19 Accreditation Council for Graduate Medical Education–accredited vascular surgery residency or
20 fellowship or AOA accredited training program prior to 2020, and should obtain American
21 Board of Surgery certification in vascular surgery, or AOA certification, within seven years of
22 completion of their training. Third, we recommend that applicants for renewal of hospital
23 privileges in vascular surgery include physicians who are board-certified in vascular surgery
24 (regardless of whether they passed the qualifying and certifying examinations or were

25 “grandfathered” by their hospitals at an earlier time), general surgery or cardiothoracic surgery.
26 These physicians with an established practice in vascular surgery should participate in
27 Maintenance of Certification programs, as established by the American Board of Surgery and
28 maintain their respective board-certification. Fourth, we provide recommendations concerning
29 guidelines for endovascular procedures for vascular surgeons and other vascular
30 interventionalists who are applying for new or renewed hospital privileges. Fifth, we endorse the
31 Inter-societal Accreditation Committee (IAC) recommendations for noninvasive vascular
32 laboratory interpretations and examinations to become a registered physician in vascular
33 interpretation (RPVI), which is included in the requirements for board-eligibility in vascular
34 surgery, but recommend that only physicians with demonstrated clinical experience in the
35 diagnosis and management of vascular disease be allowed to interpret these studies.

36

37 **Introduction**

38 The following recommendations of the Society for Vascular Surgery (SVS) are meant to
39 provide guidelines for granting hospital privileges to perform vascular interventions including
40 open surgical and endovascular procedures of blood vessels in the body, excluding intra-cardiac
41 and intracranial vessels. Of note, these interventions also apply to the thoracic aorta (exclusive of
42 intra-cardiac vessels). These guidelines are intended to be inclusive, applying to individuals
43 completing Accreditation Council for Graduate Medical Education (ACGME)-accredited
44 vascular surgery training programs, as well as individuals who have completed training in other
45 catheter-based procedures, such as interventional cardiology and interventional radiology. We

46 encourage hospitals to consider these guidelines for all specialties when granting endovascular
47 privileges.

48 Although the ultimate determination of who should and should not practice vascular
49 surgery and endovascular therapy in a given hospital remains its own responsibility, these SVS
50 guidelines provide a reference for credentialing committees regardless of the specialty of the
51 applicant. The most recent guidelines for credentialing and hospital privileges in vascular
52 surgery were published in 2008¹. The specialty of vascular surgery has evolved with the creation
53 of primary board certification such that general surgery board certification is no longer a
54 prerequisite for new vascular training paradigms.

55 Establishing minimum annual case volumes for every open and endovascular procedure
56 for vascular surgeons or other interventionalists in clinical practice as a measure of competency
57 is beyond the scope of the SVS at this time, and other specialties agree with this position². Such
58 guidelines for every arterial tree cannot be defended with existing supporting data and would be
59 so subject to opinion that they would not be relevant. The SVS recommends that hospitals take
60 into account board-certification and Maintenance of Certification (MOC), irrespective of
61 specialty, along with guidelines established by interventionalists practicing at a given hospital
62 during the appointment process. The specialists performing both open surgical and endovascular
63 procedures should also perform ongoing evaluation of outcomes of these interventions.

64

65 **Definition of Vascular Surgery**

66 Vascular surgery is the specialty that deals with the diagnosis and management of
67 disorders of the arterial, venous, and lymphatic systems, exclusive of intracardiac and

68 intracranial vessels, but which includes the thoracic aorta. We wish to emphasize that a fully
69 trained “vascular surgeon” should be considered a vascular specialist who performs traditional
70 open surgery but who also performs endovascular interventions and is competent to treat
71 vascular diseases with non-interventional means. A fully trained vascular surgeon must have
72 advanced knowledge and experience in the following six areas:

73 1. Pathophysiology and natural history: Understanding of the pathophysiology and the natural
74 history of vascular disorders to include atherosclerosis, intimal hyperplasia, non-atherosclerotic
75 arterial disease, vasculitidies, thrombophilia and thrombotic disorders, venous and lymphatic
76 diseases, and vascular end-organ disorders.

77 2. Clinical management: Clinical evaluation of vascular patients, including history, physical
78 examination, and medical management including pharmacotherapy and risk factor reduction.

79 3. Vascular diagnostic testing and imaging: Noninvasive and invasive diagnostic testing of
80 vascular disease, including but not limited to duplex ultrasound scanning, Doppler testing,
81 plethysmography, magnetic resonance imaging, computed tomography angiography, contrast
82 angiography and venography, intravascular ultrasonography (IVUS), and other new and evolving
83 imaging tools.

84 4. Open vascular surgery: Indications for and techniques of open surgical treatment, including
85 management of their complications, for vascular disorders involving arteries, veins and
86 lymphatic vessels throughout the body, exclusive of intrinsic cardiac and intracerebral vessels.
87 These arteries include the carotid artery and its extracranial branches, vertebral arteries, upper
88 extremity arteries, intra-thoracic arch branches, the aortic arch and descending thoracic aorta, the
89 abdominal aorta, the visceral and renal arteries, and the pelvic and lower extremity arteries.

90 Venous and lymphatic disorders are also included. The SVS confirms that vascular surgeons are
91 the only specialty trained to treat patients with pathologies affecting all of the above vessels with
92 open surgical treatment while also being the only specialists that can effectively treat
93 complications of said surgeries with appropriate endovascular and open surgical intervention.

94 5. Endovascular therapy: Indications for and techniques of endovascular interventions, including
95 management of their complications, for vascular disorders involving all vessels listed above for
96 open surgery. Although vascular surgeons may not be the only specialty that can treat patients
97 with these lesions with endovascular treatment, they are the only specialists that can offer the
98 comprehensive and combined elements of medical management, endovascular therapy, or open
99 surgery as effective initial treatment for all of the above disorders affecting all of the vessels
100 listed above. They are also the only specialists able to effectively treat complications of
101 endovascular intervention with appropriate endovascular and open surgical intervention.

102 6. Critical care management: Management of patients including preoperative and postoperative
103 evaluation and treatment of vascular patients in the intensive care setting. This management
104 includes understanding indications and techniques for the insertion of peripheral artery, central
105 venous, and pulmonary artery catheters for hemodynamic monitoring.

106 In summary, it is the position of the SVS that vascular surgeons are the only specialists
107 trained to treat patients with all of the above defined vascular disorders and vascular trees with
108 both open and endovascular treatments, while also being able to effectively treat complications
109 with appropriate endovascular or open surgical methods.

110

111 **Training and Certification in Vascular Surgery**

112 Currently there are three pathways approved by the ACGME for training in vascular
113 surgery which lead to board certification by the American Board of Surgery (ABS), a member
114 board of the American Board of Medical Specialties (ABMS).

115 1) Traditional pathway: This traditional training paradigm, which requires seven years to
116 complete, is referred to as a 5+2 pathway. This pathway remains the most common training
117 paradigm with 77 vascular surgery training programs in the Electronic Residency Application
118 Service (ERAS) of the Association of American Medical Colleges (AAMC) participating in this
119 traditional pathway (www.aamc.org). This pathway requires completion of a five-year general
120 surgery training program at an ACGME-approved site with a minimum experience of 850 total
121 operative procedures during this training. Completion of general surgery training is followed by
122 two years of vascular surgery training at an ACGME-approved site, which can be at the same
123 institution or a different one, with an operative experience requirement of at least 250 major
124 vascular reconstructions. Upon completing this traditional 5 + 2 pathway, the trainee is eligible
125 for board certification in both general surgery and vascular surgery by the ABS. Although the
126 ABS initially required board certification in general surgery prior to board certification in
127 vascular surgery, an ABS policy enacted in 2012 now requires that the candidate only have an
128 approved application for the general surgery qualifying exam for eligibility for vascular surgery
129 boards (www.absurgery.org).

130 2. Integrated pathway: The integrated pathway, also referred to as a 0+5 pathway, is geared to
131 medical students who have decided on a career in vascular surgery, participate in the main
132 National Residency Match Program (NRMP) during medical school, and match into vascular
133 surgery training to begin immediately following graduation from medical school. The integrated
134 pathway was first approved in 2006 by the ABS and eliminated the need for board certification

135 in general surgery prior to board certification in vascular surgery by establishment of a primary
136 board certificate in vascular surgery. Two years are devoted to core surgical training and three
137 years to vascular surgery training, all of which must be completed at the same institution. The
138 ACGME requires that residents in an integrated program complete a minimum of 500 total
139 operative procedures and 250 major vascular reconstructions. Upon completion of the five-year
140 training program, these trainees are eligible for board certification by the ABS only in vascular
141 surgery. This integrated pathway has become increasingly popular among applicants, and there
142 are presently 50 such training programs participating with ERAS. Certain institutions offer both
143 5+2 and 0+5 pathways.

144 3. Early specialization pathway (ESP): This pathway requires four years of general surgery
145 residency and two years of vascular surgery residency at the same institution and enables the
146 trainees to obtain ABS certification in both general surgery and vascular surgery. Only three
147 programs currently offer an ESP. Trainees must complete a minimum of 850 total operative
148 procedures and 250 major vascular reconstructions during these six years.

149 The ABS requires that all training programs in vascular surgery must be accredited by the
150 ACGME through the Residency Review Committee for Surgery (RRC-S). The purpose of the
151 RRC-S is to ensure that programs provide a broad and comprehensive exposure to the field of
152 vascular surgery and meet other educational, administrative and ethical requirements. Of note,
153 currently an independent RRC for vascular surgery does not exist, however, three vascular
154 surgeons sit on the RRC-S at all times. All vascular training programs reviewed by the RRC-S
155 will be reviewed by at least one vascular surgeon.

156 Upon completion of any of these training programs, the ABS allows a period of up to
157 seven years for trainees to achieve initial board certification in vascular surgery, during which
158 time the candidate is considered board-eligible. To achieve initial vascular surgery board
159 certification, the physician must successfully complete clinical training in vascular surgery
160 through one of the three previously listed pathways, obtain a letter of attestation from the training
161 program director, obtain an unrestricted state medical license to practice, successfully pass the
162 Registered Physician in Vascular Interpretation (RPVI) examination prior to sitting for the
163 certifying examination, and pass the written (qualifying) and oral (certifying) examinations
164 administered by the Vascular Surgery Board of the ABS (VSB-ABS). The SVS emphasizes that
165 graduates from general surgery or cardiothoracic surgery residencies are not eligible for ABS
166 vascular surgery board certification unless they have completed an ACGME-accredited vascular
167 surgery residency. It is the position of the SVS that exposure to the field of vascular surgery
168 during these other residencies is not sufficient to acquire the experience and judgment necessary
169 for the independent practice of vascular surgery.

170 After achieving initial board certification in vascular surgery, the ABS requires physician
171 participation in a program for MOC, which continuously measures the six core competencies
172 defined by the ACGME to enhance patient care and improve outcomes. A four-part framework is
173 used for MOC, including professional standing, lifelong learning, cognitive expertise, and
174 performance in practice. Key elements of the MOC process include a minimum of 90 hours of
175 category 1 credits over a three-year cycle (at least 60 of the 90 credit hours should include self-
176 assessment), successful completion of a written examination at ten-year intervals, and
177 participation in a surgical outcomes database. Failure to maintain these requirements for MOC
178 will result in loss of board certification (www.absurgery.org).

179

180 **Training Requirements for Vascular Surgery Trainees**

181 The recommendations for training requirements take into account the comprehensive
182 specialized training in vascular surgery and include non-operative medical management,
183 endovascular interventions, open surgical treatment, and interpretation of non-invasive
184 vascular laboratory studies.

185 I. Medical Management Requirements

186 Training in medical management of peripheral vascular disease is an integral part of
187 vascular surgery training. Vascular trainees should have a thorough understanding of vascular
188 disease risk factor modification. The care of the vascular patient occurs in a continuum and the
189 trainee is expected to be able to evaluate these patients preoperatively, in the perioperative period
190 including critical care management in the intensive care unit, and in the postoperative out-patient
191 setting including surveillance of interventions.

192 For individuals who have completed the traditional (5+2) or early specialization (4+2)
193 training programs, their general surgery training experience includes a minimum of 40 cases in
194 surgical critical care must be listed, with at least one in each of the seven categories: ventilator
195 management; bleeding (non-trauma); hemodynamic instability; organ dysfunction / failure;
196 dysrhythmias; invasive line management and monitoring; and parenteral/enteral nutrition. For
197 individuals who began integrated (0+5) training in July 2015, the 40 minimum is also required.
198 (<http://www.absurgery.org/default.jsp?certvsqe>).

199 II. Endovascular Intervention Requirements

200 Open surgical training requirements were determined by the RRC-S but endovascular
201 training requirements were developed by the SVS in conjunction with other specialties
202 performing these procedures. Vascular surgery trainees are expected to acquire sufficient
203 training to perform vascular catheter-based interventions and previous guidelines have
204 been published.³ Trainees are expected to submit their endovascular case-load experience
205 as part of their complete operative log, as verified by the program director, to the ACGME.
206 Experience should be gained performing diagnostic catheterizations among the various
207 vascular beds, and at least half should be selective catheterizations with 75% being arterial
208 and 25% venous. Similarly, at least 75% of the therapeutic procedures should be on the
209 arterial system so that the majority of the endovascular experience is not gained primarily
210 via arteriovenous dialysis access interventions.⁴ The minimum number of diagnostic
211 catheterizations is 100 and the minimum number of interventional catheterizations is 80
212 (TABLE I).⁴

213 It is not realistic or feasible to require minimum numbers to confer competency for
214 all endovascular interventions due to an absence of supporting evidence-based
215 research. Nonetheless, the SVS wishes to address three specific endovascular
216 interventions: endovascular abdominal aortic revascularization (EVAR), thoracic
217 endovascular aortic revascularization (TEVAR), and carotid artery stenting (CAS).
218 The recommended minimum number of EVAR cases is 20 and represents an increase
219 over the 2002 RRC minimum of five cases as the primary operator. This number
220 reflects the increasing percentage of endovascular aortic aneurysm repair vs. open
221 repair in the United States and specifically in vascular training programs. These
222 guidelines may change with time to remain consistent with future training.

223 The SVS endorses multi-disciplinary guideline papers in which the SVS has
224 participated concerning TEVARs.⁵ Requirements for TEVARs include full basic
225 endovascular privileges with an experience of 1) 10 TEVARs within the last two years or
226 2) less than this minimum for surgeons with robust EVAR experience of at least 25
227 EVARs with 12 as the primary operator. The term “full basic endovascular privileges”
228 means that the operator is fully qualified as defined by multispecialty guidelines. Upon
229 completion of their training, vascular surgery trainees performing TEVAR should be
230 skilled in the perioperative management of aortic surgical patients and are expected to have
231 experience in performing adjunctive procedures for TEVARs, including iliac conduits,
232 femoral artery exposure, and de-branching procedures such as carotid-subclavian bypasses.
233 By definition, vascular surgeon should have open thoracoabdominal aortic privileges,
234 assuming their training encompassed these operations (see earlier section “Definition of
235 Vascular Surgery”).

236 Multi-disciplinary credentialing guidelines for CAS have been published and endorsed
237 by the SVS.⁶ These guidelines specify that diagnostic and stenting procedures may both be
238 counted if performed during the same procedure. Although some vascular training programs
239 may not meet these requirements, the document recommends a minimum of 30 carotid
240 angiograms with half as the primary operator and a minimum of 25 carotid stent procedures
241 with half as the primary operator.⁵

242 III. Open Vascular Surgery Requirements

243 The vascular surgery trainee is expected to have performed sufficient numbers of open
244 operations covering the full spectrum in the field of vascular surgery. The requirement is
245 carefully evaluated by the RRC-S. This body and the ABS track individual components of

246 complex operations and consider all components when evaluating programs and trainees.
247 Trainees are expected to submit their operative experience to the ACGME. Their case-load
248 is verified upon their graduation by their program director.

249 The RRC has established minimum criteria for major open vascular reconstructive
250 procedures performed by vascular surgery trainees (TABLE I)
251 (https://www.acgme.org/Portals/0/VS_CatMins.pdf). The required numbers are 250
252 major vascular cases for all vascular surgery trainees, regardless of whether they
253 participate in the traditional (5 + 2), early specialization (4+2), or integrated (0+5)
254 programs. These cases should reflect an adequate representation of current practice as
255 well as breadth and balance of experience in the surgical care of vascular diseases.
256 Although these numbers are continually subject to change, currently the minimum
257 criteria for open vascular operations include 30 open abdominal vascular operations,
258 25 cerebrovascular, 45 peripheral, and 10 complex vascular reconstructions (TABLE
259 I).

260 IV. Noninvasive vascular laboratory diagnosis requirements

261 Vascular surgery training programs must include training in non-invasive vascular laboratory
262 studies. To interpret these studies, a graduating trainee must demonstrate knowledge of vascular
263 anatomy and physiology, as well as ultrasound physics, through the interpretation of non-
264 invasive vascular studies. As suggested by the Inter-societal Accreditation Committee [IAC -
265 previously the Inter-societal Accreditation of Vascular Laboratories (ICAVL)], a minimum
266 number of supervised interpreted studies during postgraduate training are required for
267 individuals desiring to apply for privileges in interpretation of specific individual areas of the
268 vascular laboratory (www.intersocietal.org/vascular/standards/IACTesting_Standard2016.pdf)

269 (TABLE II)⁷. Not all individuals interpreting vascular laboratory studies will wish to interpret
270 studies in all the areas of the vascular laboratory or will be qualified to interpret studies in all
271 areas outlined above. Individuals may therefore elect to pursue privileges only in those areas
272 which they have sufficient qualifications and training. The SVS believes that clinical experience
273 in the treatment of vascular disorders is the other mandatory component of the non-invasive
274 vascular laboratory experience, which other specialties may not provide. After completing
275 training, the practicing vascular surgeon who wishes to interpret these studies must provide
276 evidence of continuing medical education (CME) activity specific to non-invasive vascular
277 diagnostic studies. As of 2014, initial board certification in vascular surgery by the ABS- VSB is
278 predicated on successfully passing the RPVI examination.

279 As of June 2016, the Alliance for Physician Certification and Advancement (APCA) certifies
280 physicians to be a Registered Physician in Vascular Interpretation (RPVI) [(previously
281 administered by the American Registry of Diagnostic Medical Sonographers (ARDMS)]. The
282 RPVI examination has specific prerequisites that must be completed prior to taking the vascular
283 board examinations. Successful passing of the RPVI examination insures expertise in the
284 interpretation of vascular laboratory studies among current vascular surgery trainees.

285

286 **Training requirements for new vascular procedures**

287 Vascular surgeons are expected to acquire proficiency in new and evolving open and
288 endovascular procedures. As new procedures are introduced, it is important that practitioners be
289 properly credentialed to ensure excellent outcomes and patient safety, which should include
290 evidence of participation in CME courses relevant to the topic. On- or off-site mentoring may be

291 required depending on the complexity of the new procedure and experience of the operator and
292 will need to be determined on a case-by-case basis. Physicians already trained and credentialed
293 in endovascular interventions can use many new and modified devices, however, without
294 additional special certification. Proctoring for certain new procedures may be desirable
295 (<http://www.sts.org/about-sts/policies/proctoring-policy>).

296 The SVS proposes the following guidelines regarding training requirements for new open
297 and endovascular vascular procedures:

- 298 1. Training requirements for new endovascular procedures at a given hospital, including
299 cognitive training in disease management and patient care, should be the same for all
300 interventionalists, regardless of specialty and regardless of whether they are applying for
301 new vascular privileges or are already credentialed in vascular procedures at that hospital.
302 We recognize training requirements for certain procedures may vary across specialties
303 and have addressed this issue in other sections.
- 304 2. The definition of a “new” procedure changes with time. Societies may accumulate data
305 providing a basis for performing new procedures at later dates. For example, criteria were
306 previously proposed specifically for TEVAR and carotid stenting at a time when these
307 procedures were considered “new” (see earlier section “Training Requirements for
308 Vascular Surgery Trainees”). Now these procedures are performed frequently in many
309 institutions and are an integral part of all accredited vascular surgery training programs.
310 Other procedures such as fenestrated aortic grafts, renal angioplasty and stenting, visceral
311 artery angioplasty and stenting, catheter based thrombolysis, and IVUS-directed venous
312 stenting are also routinely performed in many hospitals. While other societies have

313 created criteria for credentialing for some of these procedures, consensus statements are
314 lacking for most. There may be a role for further inter-societal criteria in the future.

315 3. Training requirements should be determined by frequency and complexity of the new
316 procedures, industry requirements, and standards set by societies and by individual
317 hospitals already performing these procedures. There should be an initial period of
318 monitoring and evaluation of the provider's performance of the new procedure.

319 4. Individual hospitals should establish guidelines determined by all accredited
320 interventionalists practicing these newer procedures. These guidelines should include
321 ongoing evaluation of outcomes for these new vascular surgical and endovascular
322 procedures (see later section "Renewal of hospital privileges").

323 The SVS continues to support past recommendations by multidisciplinary writing groups,
324 which included SVS participation, regarding TEVAR and CAS.^{4,5} The same numbers mentioned
325 for vascular residents entering practice apply to credentialed surgeons already in practice (see
326 earlier section "Training Requirements for Vascular Surgery Trainees"). For credentialed
327 vascular surgeons in practice, a minimum of 10 hours of CME activity should be devoted to
328 TEVAR every 2 years. For those performing CAS, 20 hours of CME activity specific to
329 percutaneous therapeutic endovascular intervention and cerebrovascular disease should be
330 required, 10 of which should be relevant to cervical or extracranial carotid angioplasty and
331 stenting every 3 years⁸. Successful completion of an industry-sponsored course by credentialed
332 surgeons in practice may also be desirable to ensure familiarity with the nuances of various new
333 devices; however, this should not be equated with having achieved competency in the overall
334 procedure. As suggested earlier, proctoring for certain procedures may be considered.

335

336 **Requirements for hospital privileges in vascular surgery and endovascular interventions**
337 **and non-invasive vascular laboratory interpretation**

338 New applicants: Regarding initial open vascular surgical privileges, hospital-
339 credentialing committees must recognize the high level of training and expertise previously
340 outlined and offer new privileges only to board-eligible or board-certified vascular surgeons.
341 Regarding initial endovascular privileges, the SVS also firmly recommends that hospital
342 committees recognize the high level of training required by board-eligible and board-certified
343 vascular surgeons, which we have also previously detailed. We recognize that physicians from
344 other specialties may be qualified to perform endovascular procedures if they have received
345 sufficient training from their own ACGME-approved training programs. We agree with the
346 recommendations of Reed et al that one-year of training devoted to peripheral vascular
347 interventions, in addition to one year of coronary intervention training, be required for
348 interventional cardiologists to be granted peripheral endovascular privileges⁹. The SVS
349 recommends that the criteria used in each facility to grant initial privileges in endovascular
350 procedures be designed to provide vascular care that is safe and centered on the best possible
351 patient outcomes using evidenced based guidelines. As part of the credentialing process, we
352 recommend that hospitals should have criteria in place to certify practitioners from different
353 specialties when performing similar procedures.

354 Of note, The Joint Commission (TJC) (www.jointcommission.org) holds all healthcare
355 facilities responsible for credentialing physicians to the same standards, irrespective of physician
356 specialty. Case volumes have been used as a surrogate for competence for these procedures with
357 the realization that it is an imperfect standard.^{2,7} The SVS believes that specific privileging
358 criteria including minimum number of cases is not feasible for endovascular interventions for

359 each vascular tree. However, specific criteria have been developed for endovascular
360 interventions for thoracic aortic pathology, carotid artery disease and others, which the SVS
361 endorses.⁴⁻⁶

362 Additionally, in accordance with The Joint Commission, the SVS recommends that
363 credentialing of new applicants should also require verification of licensure and an assessment of
364 the physician's current competence to perform the requested privileges.

365 Renewal of privileges: Renewal of privileges should be granted to physicians with existing
366 privileges in 1) open vascular surgery, namely vascular surgeons, general surgeons or
367 cardiothoracic surgeons, and 2) endovascular interventions, namely vascular surgeons,
368 interventional cardiologists, and interventional radiologists, who have completed appropriate
369 training programs and on the basis of maintenance of board-certification and MOC requirements.

370 Credentialing committees in each hospital should define case volumes and outcomes for
371 re-credentialing. Renewal of privileges in vascular surgery and endovascular procedures for
372 surgeons and other interventionalists who already have privileges to perform these procedures
373 should be granted on the basis of an analysis of their patient outcomes in comparison to local,
374 regional, and national standards. The SVS strongly encourages hospitals and their credentialing
375 bodies to have access to a nationally validated registry of vascular surgery and endovascular
376 procedures for all physicians performing these procedures, regardless of physician specialty or
377 the location where they are performed (e.g. cardiac catheterization laboratory, interventional
378 radiology suite, and hybrid or conventional vascular operating rooms). The SVS endorses
379 participation in the Vascular Quality Initiative (VQI – www.vascularqualityinitiative.org) to
380 improve regional benchmarking by assessing the quality, safety, effectiveness and cost of
381 vascular procedures. By collecting, analyzing and sharing data on pre-procedure risk factors,

382 intra-procedural variables, post-procedural outcomes, and one-year follow-up data, outcome
383 analysis can be performed. The SVS recommends that a procedure not reported in the VQI or
384 other validated registries should not be referred to in terms of establishing minimum numbers for
385 privileges.

386 The SVS also endorses Ongoing Professional Practice Evaluation (OPPE) and Focused
387 Professional Practice Evaluation (FPPE) processes as directed by The Joint Commission for
388 newly credentialed physicians, newly credentialed procedures, and physician probationary
389 periods (www.jointcommission.org). OPPE can be used as a performance enhancement tool to
390 avoid adverse outcomes. Quality measures selected by the hospital's credentialing committee
391 within the field of vascular surgery should be established and met during a pre-determined time
392 period immediately following initial appointment of a vascular surgeon or other endovascular
393 specialist. These quality indicators, which can mirror ongoing VQI data collection, may be
394 compared to peer or benchmark data and used to validate competence within the field and
395 determine the maintenance or alteration of privileges. More importantly, this valuable measure
396 can allow early identification of negative trends and lead to timely proactive education, training
397 or collegial intervention. Similarly, Focused Professional Practice Evaluation (FPPE) can be
398 instituted for vascular surgeons requiring additional review during probationary periods or for
399 newly credentialed procedures. Meaningful quality measures should be established for all new
400 procedures based on review of available data in the literature and input from a multidisciplinary
401 group of peers. Prospective review of these indicators will insure safe and proficient
402 implementation of the new procedure for each qualifying vascular surgeon or endovascular
403 interventionalist.

404 Mechanisms of audit, morbidity and mortality review, and corrective actions in each
405 hospital fall under the purview of a peer-review committee, credentialing committee, or
406 designated subcommittee with input from a multidisciplinary quality assurance committee.

407 In regards to credentialing for interpretation of non-invasive vascular laboratory studies,
408 whether for new privileges or renewal of privileges, RPVI credentialing from the Alliance for
409 Physician Certification and Advancement (APCA) should be construed as having fulfilled the
410 requirements for vascular laboratory credentialing, if they have also demonstrated a commitment
411 to treating vascular disorders. The APCA requires a specific number of cases and experience
412 before allowing physicians to take the examination (see earlier section “Training Requirements
413 for Vascular Surgery Trainees”). Vascular surgeons who completed an ACGME-approved
414 vascular surgery training program since 2014 are required to obtain an RPVI certificate to
415 become board-eligible and therefore are qualified to have privileges for interpretation of non-
416 invasive vascular laboratory studies, since they also have fulfilled criteria of thorough training in
417 treating vascular disease. We recommend that other specialists follow these same guidelines. The
418 SVS firmly recommends that physicians not be allowed to interpret non-invasive vascular
419 laboratory studies, even if the candidate passes the examination, unless the applicant also has
420 completed or is in the process of completing a residency or fellowship dedicated to the
421 comprehensive management of vascular disease, such as vascular surgery, vascular medicine,
422 cardiology, or radiology. This additional requirement prohibits physicians who do not have
423 thorough training in the diagnosis and treatment of vascular disorders from being allowed to
424 interpret these studies.

425 Obtaining certification from the American Society of Neuroimaging (ASN) is acceptable
426 for physicians who wish to interpret extracranial and intracranial examinations only.

427 It should be emphasized that the SVS, in agreement with The Joint Commission
428 standards, believes that the decision to grant or deny hospital privileges in vascular surgery to
429 new applicants or to those with established practices, irrespective of specialty, should be an
430 objective evidence-based process.

431 A summary of guidelines for hospital privileges in vascular and endovascular surgery is
432 provided in TABLE III.

433 This document was reviewed and approved by the VSB-ABS as well as the Association
434 of Program Directors in Vascular Surgery (APDVS).

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REFERENCES

- 1) Calligaro KD, Toursarkissian B, Clagett GP, et al. Guidelines for hospital privileges in vascular and endovascular surgery: Recommendations of the Society for Vascular Surgery. *J Vasc Surg* 2008;47:1-5.
- 2). Bashore TM, Balter S, Barac A, Byrne JG, Cavendish JJ, Chambers CE, et al. 2012 American College of Cardiology Foundation/Society for Cardiovascular Angiography and Interventions expert consensus document on cardiac catheterization laboratory standards update: A report of the American College of Cardiology Foundation Task Force on Expert Consensus documents developed in collaboration with the Society of Thoracic Surgeons and Society for Vascular Medicine. *J Am Coll Cardiol*. 2012;59(24):2221-305.
- 3). Creager MA, Gornik HL, Gray BH, Hamburg NM, Iobst WF, Mohler ER, 3rd, et al. COCATS 4 Task Force 9: Training in Vascular Medicine: Endorsed by the Society for Vascular Medicine. *Vasc Med*. 2015;20(4):384-94.
- 4). White RA, Hodson KJ, Ahn SS, Robson RW II, Veith FJ. Endovascular interventions training and credentialing for vascular surgeons. *J Vasc Surg* 1999;29:177-86.
- 5). Hodgson KJ, Matsumura JS, Ascher E, Dake MD, Sacks D, Krol K, et al; SVS/SIR/SCAI/SVMB Writing Committee. Clinical competence statement on thoracic endovascular aortic repair (TEVAR)-multispecialty consensus recommendations. A report of the SVS/SIR/SCAI/SVMB Writing Committee to Develop a Clinical Competence Standard for TEVAR. *J Vasc Surg* 2006;43:858-62.
- 6). Rosenfield KM; SCAI/SVMB/SVS Writing Committee. Clinical competence statement on carotid stenting: training and credentialing for carotid stenting. Multispecialty consensus

458 recommendations. A report of the SCAI/SVMB/SVS writing committee to develop a clinical
459 competence statement on carotid interventions. J Vasc Surg 2005; 41:160-8.

460 7). IAC standards and guidelines for vascular testing accreditation. Intersocietal Accreditation
461 Commission Website. July 18, 2016. Retrieved from URL:

462 <http://www.intersocietal.org/vascular/standards/IACVascularTestingStandards2016.pdf4>.

463 8). The IAC Standards for Carotid Stenting Accreditation. Intersocietal Accreditation Commission
464 Website. July 1, 2014. Retrieved from URL:

465 <http://www.intersocietal.org/carotid/standards/IACCarotidStentingStandards2014.pdf>

466 9). Reed GW, Gornik HL. Training Pathways in Peripheral Vascular Disease For FITs.

467 American College of Cardiology Website. Jan 2016. Retrieved from

468 URL: [http://www.acc.org/membership/sections-and-councils/fellows-in-training-section/fit-](http://www.acc.org/membership/sections-and-councils/fellows-in-training-section/fit-information-hub/career-development/2016/01/18/10/16/training-pathways-in-peripheral-vascular-disease-for-fits)
469 [information-hub/career-development/2016/01/18/10/16/training-pathways-in-peripheral-](http://www.acc.org/membership/sections-and-councils/fellows-in-training-section/fit-information-hub/career-development/2016/01/18/10/16/training-pathways-in-peripheral-vascular-disease-for-fits)

470 [vascular-disease-for-fits](http://www.acc.org/membership/sections-and-councils/fellows-in-training-section/fit-information-hub/career-development/2016/01/18/10/16/training-pathways-in-peripheral-vascular-disease-for-fits)

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TABLE I: RRC MINIMUM CRITERIA FOR ENDOVASCULAR

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AND OPEN VASCULAR SURGERY CASES

Category	Minimum Required Number	475
Endovascular Abdominal Aortic Aneurysm Repair (EVAR)	20	476
Endovascular Therapeutic Procedures	80	477
Endovascular Diagnostic Procedures	100	478
Open Complex	10	479
Open Peripheral	45	
Open Cerebrovascular	25	480
Open Abdominal	30	481

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490 **TABLE II: INTER-SOCIETAL ACCREDITATION COMMITTEE GUIDELINES FOR**
491 **SUPERVISED INTERPRETED STUDIES**

- 492 • Peripheral arterial physiologic test, 100
- 493 • Peripheral arterial duplex scanning, 100
- 494 • Peripheral venous duplex scanning, 100
- 495 • Carotid duplex scanning, 100
- 496 • Transcranial duplex/Doppler scanning, 100
- 497 • Visceral vascular duplex scanning, 75

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509 **TABLE III: SUMMARY OF GUIDELINES FOR HOSPITAL PRIVILEGES**

510 **IN VASCULAR SURGERY AND ENDOVASCULAR THERAPY**

511 New hospital privileges:

512 Completion of ACGME-approved vascular surgery residency with passing of ABS vascular
513 certification within seven years of completion of training

514 This training includes the open surgical and endovascular experience inherent in these approved
515 programs, along with passing the RPVI exam and gaining knowledge of medical management of
516 these patients

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518 Renewal of existing vascular privileges for vascular surgeons:

519 Passage of ABS re-certifying examination in vascular surgery within ten years

520 Completion of MOC by the American Board of Surgery

521 Outcome analysis based on regional or local registries (e.g. SVS Vascular Quality Initiative)

522 Passing the RPVI exam or appropriate CME in the non-invasive vascular laboratory

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524 Renewal of existing vascular privileges for non-vascular surgeons:

525 Passage of re-certifying examination in the physician's specialty within ten years

526 Completion of MOC

527 Outcome analysis based on regional or local registries

528 Passing the RPVI exam or appropriate CME in the non-invasive vascular laboratory

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